

Appl. No. 10/807,524
Amdt. dated Feb. 17, 2006
Reply to Office Action of Nov. 17, 2005

REMARKS/ARGUMENTS

1. The Examiner rejected claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Snygg (U.S. Patent No. 6,239,750) in view of Lee et al. (U.S. Patent No. 6,114,997). Reconsideration of this application is respectfully requested in view of the amendments and/or remarks provided herein.

Rejections under 35 U.S.C. § 103(a)

2. Claims 1-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Snygg in view of Lee et al. ("Lee"). Applicants have herein amended the pending claims to more clearly distinguish the recitations thereof from the disclosures of Snygg and Lee. In particular, Applicants have cancelled claims 1, 3-6, 10 and 13, and have amended claims 2 and 7 such that all remaining independent claims (namely, claims 2, 7 and 18) clearly recite an antenna system that includes at least two *differentially fed, actively excited*, stacked patch antenna elements that resonate at different frequencies. The cited references fail to disclose or suggest such an antenna structure.

Snygg discloses an antenna arrangement that includes a first active patch element (10) radiating in a first frequency band and a second active patch element (11) radiating in a second frequency band that is lower than the first band. (See col. 3, lines 17-21.) The two patch elements are respectively driven in quadrature to achieve linear polarization (see col. 3, lines 22-25; col. 4, lines 37-40) as noted by the Examiner (see page 2 of the Office Action). To achieve circular polarization, Snygg discloses combining two linear polarizations. (See col. 4, lines 41-43.) Thus, Snygg discloses two *quadrature fed, actively excited*, stacked patch antenna elements that resonate at different frequencies.

Lee discloses a stacked disc radiator (80) that includes a single, differentially fed active patch element (64) and a passive patch element (66). (See col. 4, lines 52-65.) The parasitic element (66) is parasitically excited, and is not directly fed. (See col. 7, lines 33-37.) The parasitic element radiates at a higher frequency than does the active element. (See *id.*) Therefore, Lee discloses a stacked patch antenna arrangement that includes *only one* differentially fed, actively excited antenna element.

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To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. § 2142. Second, there must be a reasonable expectation of success. *Id.* Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *Id.* The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, **and not based on applicant's disclosure.** *Id.* (emphasis added). The Federal Circuit has clearly and repeatedly stated that an Examiner must identify and explain a motivation to combine references in order to make a *prima facie* case of combination-type obviousness. *See, e.g., In re Rouffet*, 149 F.3d 1350, 1357-59 (Fed. Cir. 1998). While this motivation can be within the knowledge of a person of ordinary skill in the art, it must be within his knowledge at the time of the Applicant's invention and without also knowing of the invention. *Id.* at 1357; *see also* M.P.E.P. § 2142. In particular, the Examiner is required to "show a motivation to combine references that create the case of obviousness. In other words, the Examiner must show reasons that the skilled artisan, confronted with the same problem as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." *Id.* The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01 (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)) (emphasis in original). Further, a prior art reference must be considered in its entirety (i.e., as a whole), including portions that would lead away from the claimed invention. M.P.E.P. § 2141.02 (emphasis in original).

The Examiner notes that there would be motivation in the prior art to combine the disclosures of Snygg and Lee in order to achieve the benefits of dual circular polarization. (*See* Office Action, p. 2.) However, the motivation suggested by the Examiner is in direct conflict with the benefits of Lee and the teaching of Snygg. As noted above, a prior art reference must be considered in its entirety (i.e., as a whole), including portions that would lead away from the claimed invention. M.P.E.P. § 2141.02. In this case, Snygg expressly states that circular polarization is achieved with his invention using two linear polarizations, (*see* col. 4, lines 41-

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43), as opposed to differentially feeding *both* active patch elements as recited in Applicants' claims. In addition, Lee identifies an object of his antenna structure is to provide a planar, low profile antenna. (See col. 1, lines 46-48 and 54-58; col. 8, lines 11-13.) Incorporating a feed system to differentially feed Lee's high frequency patch element (66) would complicate the antenna structure of Lee and possibly frustrate Lee's purpose. As a result, Snygg provides no motivation to use the differential feed disclosed in Lee because Snygg provides an alternative approach to obtaining circular polarization, and Lee provides an express motivation not to combine his system with a system such as Snygg's (in which both patch elements are actively fed) in order to meet Lee's planar, low profile objective. Therefore, the Examiner has failed to provide a *prima facie* case of obviousness because there is no motivation to combine Snygg together with Lee in view of the express disclosures of Lee and Snygg.

Moreover, even assuming *arguendo* that Snygg and Lee could be properly combined (which Applicants contest), the result of the combination fails to teach or suggest all of Applicants' claim limitations as required by M.P.E.P. § 2142. If Snygg and Lee were to be combined, the result would be a stacked patch antenna structure in which the low frequency patch element is differentially fed (from Lee) and the high frequency patch element is fed in quadrature (from Snygg). Such a structure is not what is claimed by Applicants. Instead, Applicants' claims recite a stacked patch antenna system that includes *at least two differentially fed* patch antenna elements.

Based on the foregoing, Applicants' independent claims 2 (as amended), 7 (as amended), and 18 (as previously presented, but clarified herein) are not disclosed or suggested by Snygg or Lee, whether taken alone or in combination. Therefore, Applicants respectfully request that the rejection of claims 2, 7, and 18 be withdrawn and said claims be passed to allowance.

Claims 8, 9, 11, 12, 14-17, 19, and 20 are dependent upon claims 7 and 18, respectively, which claims have been shown allowable above. Therefore, since claims 8, 9, 11, 12, 14-17, 19, and 20 each introduce additional subject matter that, when considered in the context of the recitations of their respective base claim, constitutes patentable subject matter, Applicants respectfully submit that the recitations of claims 8, 9, 11, 12, 14-17, 19, and 20 are not disclosed or suggested by Snygg or Lee, whether taken alone or in combination. Therefore, Applicants

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respectfully submit that claims 8, 9, 11, 12, 14-17, 19, and 20 are in proper condition for allowance.

Other Amendments to the Claims

3. Claim 18 was amended merely to clarify the nature of the patch elements consistent with the remainder of the body of the claim. None of these amendments were intended to narrow claim 18 in any manner or were made for any purpose related to patentability. Applicants submit that such claim amendments are fully supported by Applicants' originally filed specification.

4. The Examiner is invited to contact the undersigned by telephone, facsimile or email if the Examiner believes that such a communication would advance the prosecution of the instant application. Please charge any necessary fees associated herewith, including extension of time fees (if applicable and not paid by separate check), to the undersigned's Deposit Account No. 50-1111.

Respectfully submitted,

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